Dual-band radio transmitter

T10, T10C
T10U, T10UC

(v.YYMMDD)

Installation manual

www.trikdis.com

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Safety requirements

Before using the transmitter, make sure to read these instructions and follow safety requirements.

Transmitter installation and servicing may only be carried out by qualified personnel with knowledge about low-voltage and radio transmitting equipment and complying with safety requirements.

T10 transmitter is mounted in limited-access areas at safe distance from the radio-emission sensitive electronic equipment.

Transmitter function

T10 is a transmitting device applied for transmitting messages of intruder and fire alarm systems to a monitoring and alarm receiving center (MARC) at specified licensed VHF or UHF radio frequency. The transmitter must be connected to a control panel for transmitting collected signals or messages of control panel whereas radio receiver of MARC receives of these and directs to alarm monitoring software. Features:

- Transmitters with modifications *T10* and *T10C* transmits at VHF radio frequency whereas transmitters with modifications *T10U* and *T10UC* transmits at UHF radio frequency;
- One transmitter transmits information of two secured objects with two object ID numbers
- Each transmission can encoded with two different transmission protocols and transmitted at two licensed radio frequencies;
- Transmitters with modifications *T10* and *T10U* transmit messages collected from data bus of control panel whereas transmitters with modifications *T10C* and *T10UC* transmit messages if their input status changes due to event has occurred in alarm system;
- all operating parameters are set with the software *T10config* via USB port;

Operation

Received messages from control panel are transmitted at licensed radio frequency and format are set. Transmitter's message consists of the transmitter or repeater tag, transmitter or object identification number (object ID) and event code. Transmitter can be set to broadcast information of two secured objects at two radio frequencies.

Most of the modern control panels create message on the event in Contact ID format, which is described in SIA DC-05-1999.99 standard. If the transmitter is set to encode transmission at RAS-3_CID format, then Contact ID message is transmitted unchanged. In order to synchronize transmitter with the existing receiving equipment, other suitable transmission encoding formats can be set. However, other formats cannot encode full Contact ID, thus they will be converted to the UNI codes. The conversion table can be edited. If MARC uses receiving equipment of TRIKDIS, thus received UNI code is directed to existing alarm monitoring software at compatible format.

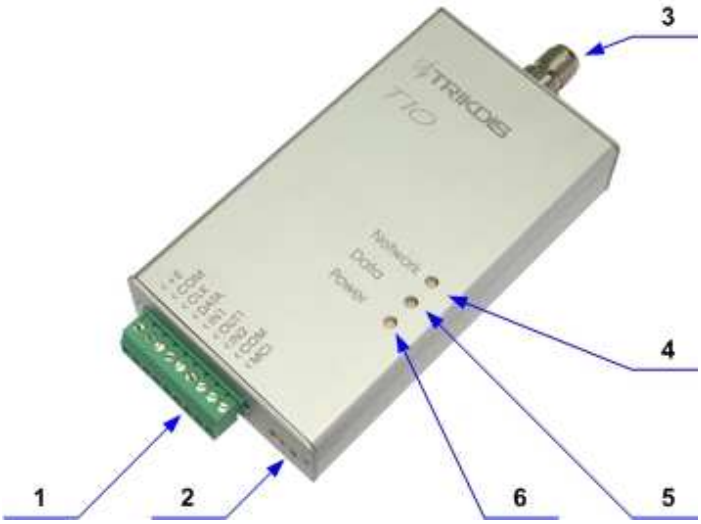
To the transmitter input IN (programmable type *NC/NO/EOL=2,2 kΩ*) external circuits can be connected. When input is triggered, transmitter broadcasts the set message.

Transmitter periodically sends test messages. Timely receipt of those reports is inspected by the monitoring software.

Transmitter automatically monitors power supply voltage. If voltage falls below 11,5 V threshold, the transmitter will send a report about power supply failure. If voltage rises above 12,6 V threshold, the transmitter will send a report about power supply restoring.

When power supply voltage falls below 10 V thresholds, the transmitter will send a report on switching to *sleep* mode. In *sleep* mode transmitter does not collect or send any messages. If transmitter operates in *sleep* mode and power supply voltage rises above 12,6 V threshold, then the transmitter will start operating in working mode and will send the *test* message.

Outside view



1. Terminal block
2. USB port and button RESET
3. Antenna connector
4. Indicator *Network*
5. Indicator *Data*
6. Indicator *Power*

Meaning of the terminals

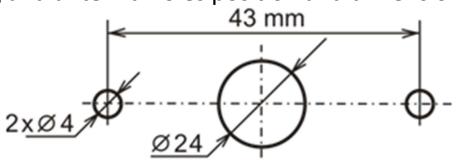
Transmitter T10, T10U terminals	Description
+E	+12V power supply input
COM	Common ground
CLK	Synchronization signals terminal
DATA	Data signals terminal
IN1	1st input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
OUT1	Output terminal (will be used in future)
IN2	2nd input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
COM	Common ground
MCI	For future use

Transmitter T10C, T10UC terminals	Description
+E	+12V power supply input
COM	Common ground
IN1	1st input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
IN2	2nd input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
IN3	3rd input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
IN4	4th input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
IN5	5th input terminal for connection of external circuits (type NC/NO/EOL=2.2 kΩ can be set)
COM	Common ground
MCI	For future use

LED indication

LED	*Operation*	*Meaning*
Network indicates message status	Constant yellow	Message is sent
Data indicates data exchange	Constant green	Unsent messages in memory are present
	green flashing	Messages from control panel are incoming
	red flashing	Transmitter operating in *sleep* mode
Power indicates the power status, programming mode	green flashing	Power supply voltage is sufficient.
	yellow flashing	Power supply voltage is insufficient (≤11,5 V),
	Green and yellow in turn flashing	Programming mode

Installation

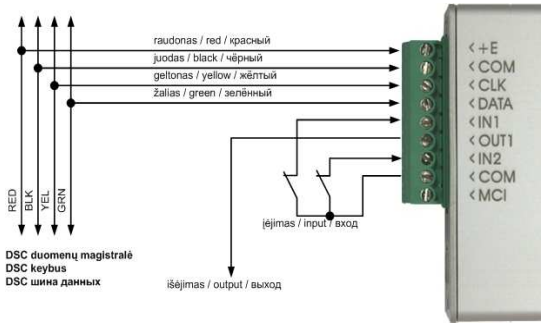
Actions	*Comments*
1. Set the transmitter operating parameters.	See: **Setting of operating parameters**
2. Mount the transmitter inside control panel's metal casing.	Mounting and antenna holes position and dimensions: 
3. Screw the antenna to the transmitter.	
4. According to wiring diagrams, connect the transmitter to external equipment.	See: **Wiring diagrams**.
5. Turn on power supply.	
6. According to the operation of LED indicators, assess whether the transmitter is operating properly.	See: **LED indication**.
7. Make sure that the radio receiver receives messages transmitted by the transmitter.	If message receiving level is low, more efficient antennas should be used or the radio transferring system should be enlarged by the using radio repeaters network.

Wiring diagrams

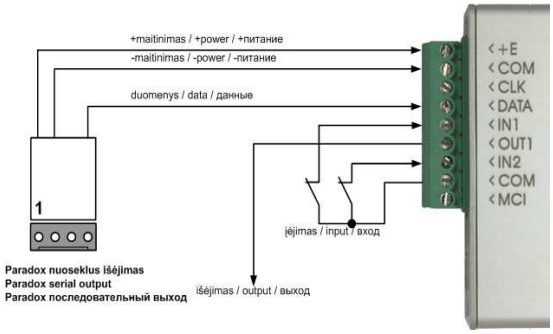
Transmitter *T10, T10U* can be connected to the widespread control panels:

Compatible control panel models

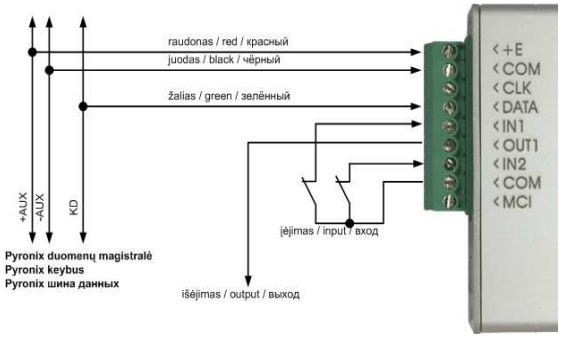
Manufacturer	*Compatible control panel models*
DSC®	PC585, PC1565, PC5020, PC1616, PC1832, PC1864
PYRONIX®	MATRIX 424, MATRIX 832, MATRIX 832+, MATRIX 6, MATRIX 816
GE®	CADDX NX-4, NX-6, NX-8
PARADOX®	SPECTRA SP5500, SP6000, SP7000, 1727, 1728, 1738
PARADOX®	MAGELLAN MG5000, MG5050
PARADOX®	DIGIPLEX EVO48, EVO192, NE96, EVO96
PARADOX®	ESPRIT E55, 728ULT, 738ULT



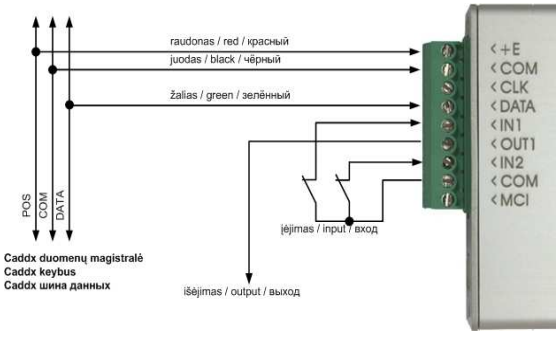
Transmitter T10, T10U connecting to DSC® Power Series control panels.



Transmitter T10, T10U connecting to PARADOX® control panels.



Transmitter T10, T10U connecting to PYRONIX® Matrix Series control panels.



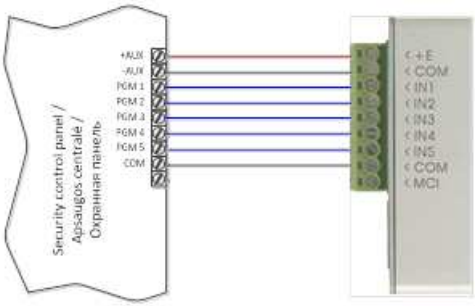
Transmitter T10, T10U connecting to GE® *Caddx* control panels.

T10, T10U transmitter functionality can be increased by connecting interfaces C11, C14 or CZ6. Interface operation and wiring are presented in particular interface installation manual.

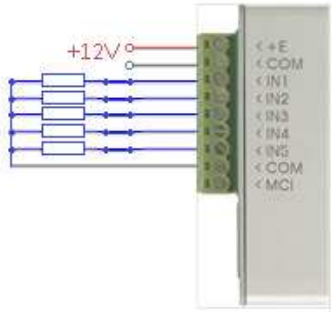
Presumable interface usage

Interface	*Purpose of interface*
C11	It directs control panel's Contact ID report by DTMF tones to the Transmitter to be transmitted at set licensed radio frequency.
C14	It directs control panel's Contact ID report by DTMF tones to the Transmitter to be transmitted at set licensed radio frequency or commutates land line to be transmitted to PSTN receiver. In this case alarm messages can reach monitoring station receiver via main and/or backup communication channel.
CZ6	Increases amount of inputs up to 6 (EOL=2,2 kΩ).

Transmitter *T10C, T10UC* can be connected to any control panel's PGM outputs or used as a standalone security device:



Transmitter T10C, T10UC connecting to control panel. Input type set as *NO* or *NC*.



Transmitter T10C, T10UC connecting to control panel. Input type set as *EOL=2,2 kΩ*.

Setting of operating parameters

Software T10config applied for setting of operating parameters can be downloaded from the www.trikdis.com website.

In order to limit the ability to change the transmitter settings, user access control is implemented in two ways:

a) User Access control using password stored in the transmitter memory:

Software user who is authorized to use more of the following features will be called *Admin*, and the lower-level user whose rights are more restricted will be called *User*. After logging in with the password of *User* these features are available, that are identified by *Admin* only. After logging in with the password of *Admin*, you can use all available features and restrict permissions to *User*. See Annex. **Configuration of authorization and access restricting for another user**.

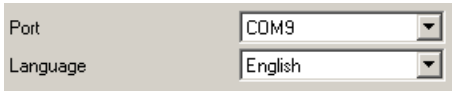
b) Software features control, using file stored in *T10config* folder:

Software distributor may limit its functionality and determine appropriate rights to customer. Permission settings are stored in *license.lic* file that may be provided due to distributor and customer agreement. If the software during start-up will be unable to read settings from permissions file, then it will run in DEMO mode, i.e. maximum restrictions will be set. Permissions file *.lic is loaded with menu commands ***File/Import***. See **Annex. Configuration of authorization and access restricting for another user**.

1. Connect T10 transmitter to PC's USB port.

Note: USB driver must be installed on PC. When the transmitter is connected to PC for the first time, MS Windows should open the USB driver installation window - ***Found New Hardware Wizard.*** Download MS Windows USB driver from www.trikdis.com website. In the wizard window select the option ***Yes, this time only*** and click ***Next*** button. After ***Please choose your search and installation options*** window is opened, click Browse button and specify the location where USB driver was saved. Follow the wizard and perform all the remaining steps to install the USB driver.

2. Run ***T10config*** software.
3. Select the branch named ***Settings***.



In field **Port** you must select a port that transmitter is connected to.
A specific port occurs only when transmitter is connected and USB driver **is installed properly.** See Connect T10 transmitter to PC's USB port.
From ***Language*** field select preferred user interface language.

4. Click ***Device info*** button.

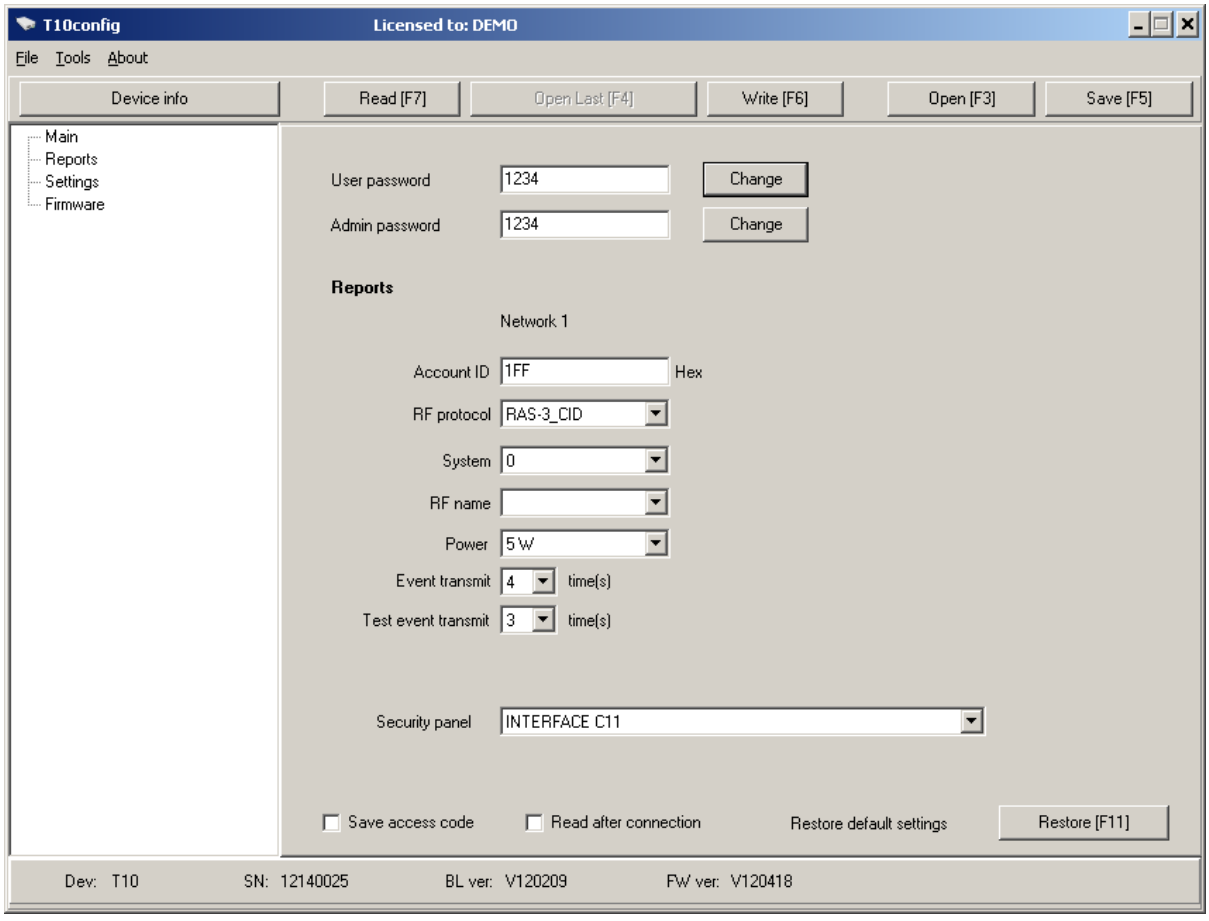
When the transmitter is connected to PC, Power indicator should flash green and yellow in turn. In *T10config* software's status bar should be displayed connection status *Connected* and information about the connected transmitter:

Dev: T10	Product number;
SN: 422	Transmitter serial number;
BL ver:	Boot-loader version;
SW ver:	Transmitter firmware version.

5. Click ***Device info*** button.

When the request window ***Access Code*** appears enter log-in password (default password - 1234), then click ***OK***.
If you want the software to remember your Access code, check the box ***Remember***. When connecting next time, you won't be prompted for password again.

6. Select the branch named ***Main*** and set the required parameters:



User password — *User* user's password box. To change this password, click ***Change*** button next to the box and in newly opened window enter desired value;

Admin password — *Admin* user's password box. To change this password, click ***Change*** button next to the box and in newly opened window enter desired value; See **Annex. Configuration of authorization and access restricting for another user**.

Protocol — List of radio systems. Select the encryption protocol compatible with the radio receiver. If the transmitter is set to any other protocol than *RAS-3_CID,* then the received *ContactID* message will be converted to manufacturer's predefined UNI code. Conversion table can be seen in the ***Tools*** menu option under ***CID to UNI table…*** and by clicking ***Read [F7]*** in newly opened window. In the conversion table, symbol "?" means any decimal number (0-9). Edit the table only when necessary. The table is loaded into the transmitter memory by clicking ***Write [F6]*** button. By clicking ***Save [F5]*** button, conversion table will be saved to PC; clicking ***Load*** button will load file into the software.

Account ID — Field for entering transmitter's object identifier;

System — Field for entering radio subsystem number;

Group — Field for entering a number of radio group;

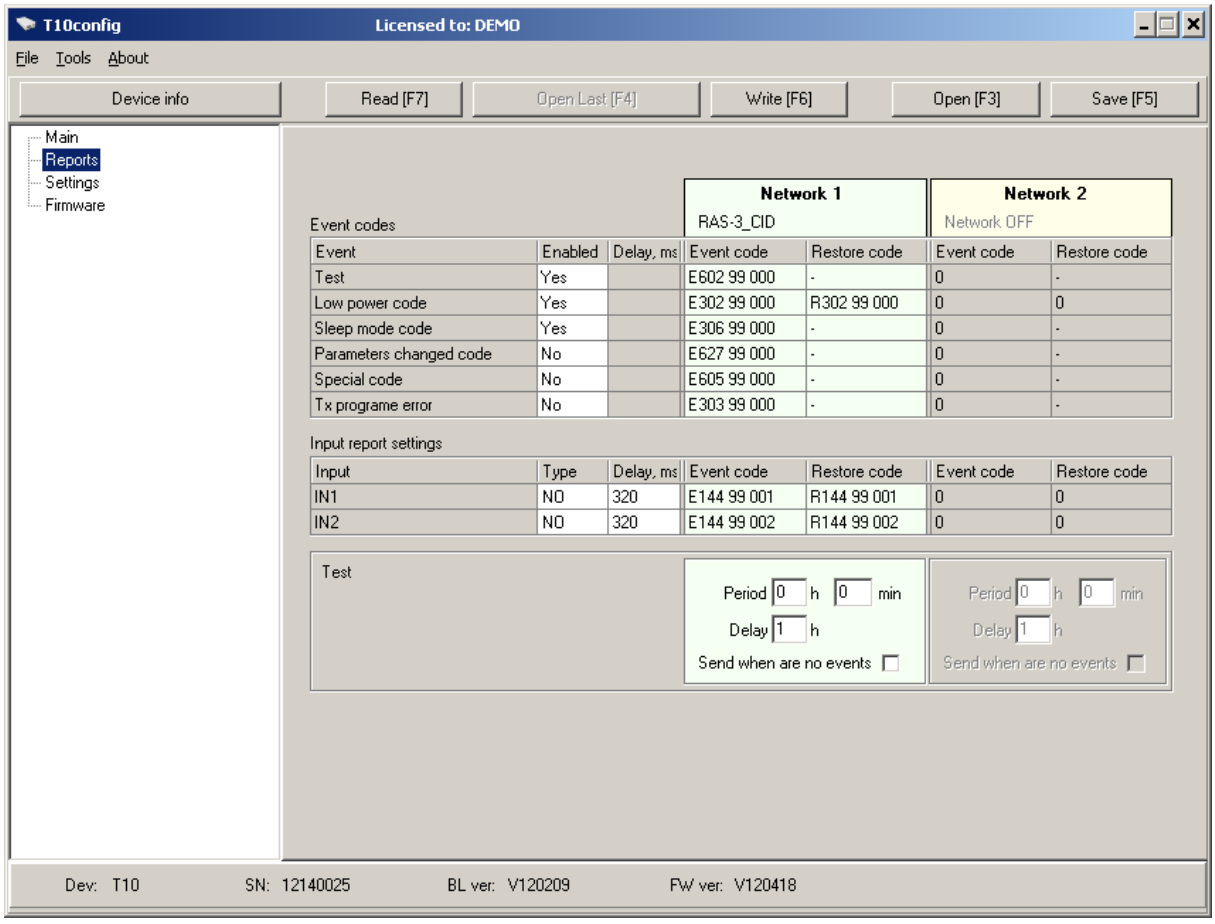
RF name — List for selecting names provided to radio frequencies;

Event transmit time(s) — List for selecting the number of broadcasts for same message (recommended value – 3).

Test event repetitions — List for selecting the number of *Test* broadcasts (recommended value – 2).

Security panel — From this list select the *interface* control panel model which is connected to *T10, T10U* transmitter. If *C11*, *C14* or *CZ6* interface is connected – select ***INTERFACE C11, C14, CZ6*** from the list.

7. Transmitter parameters in ***Reports*** branch. To change the settings each field should be double-clicked and in newly opened window desired values should be entered:


T10config
Licensed to: DEMO
File Tools About
Device info
Read [F7]
Open Last [F4]
Write [F6]
Open [F3]
Save [F5]
Main
Reports
Settings
Firmware
Event codes
Network 1
RAS-3_CID
Network 2
Network OFF
Event | Enabled | Delay, ms | Event code | Restore code | Event code | Restore code
Test | Yes | | E602 99 000 | - | 0 | -
Low power code | Yes | | E302 99 000 | R302 99 000 | 0 | 0
Sleep mode code | Yes | | E306 99 000 | - | 0 | -
Parameters changed code | No | | E627 99 000 | - | 0 | -
Special code | No | | E605 99 000 | - | 0 | -
Tx programe error | No | | E303 99 000 | - | 0 | -
Input report settings
Input | Type | Delay, ms | Event code | Restore code | Event code | Restore code
IN1 | NO | 320 | E144 99 001 | R144 99 001 | 0 | 0
IN2 | NO | 320 | E144 99 002 | R144 99 002 | 0 | 0
Test
Period 0 h 0 min
Delay 1 h
Send when are no events
Period 0 h 0 min
Delay 1 h
Send when are no events
Dev: T10
SN: 12140025
BL ver: V120209
FW ver: V120418

Event codes — Transmitter event parameters input fields.

Test – enter in this field *Test* message sending parameters: send/don't send *Test* message; *Test*

broadcasting via first or second radio frequency;

Low power – enter in this field parameters for power supply events: send/don't send message; too low voltage (less than 11,5 V) event code and restore to operating condition (over 12,6 V) event code via first or second radio frequency;

Sleep mode code – enter in this field parameters for *sleep* mode events: send/don't send message; event code when voltage falls below 10 V threshold via first or second radio frequency;

Parameters changed code – enter in this field parameters for transmitter parameter changes: send/don't send message; event code for sending via first or second radio frequency;

Service code – enter in this field parameters for repeaters network testing code: send/don't send message; event code for sending via first or second radio frequency;

Program error – enter in this field parameters for transmitter's internal error: send/don't send message; event code for sending via first or second radio frequency;

Input report settings Area that stands for entering reports of signals from the external circuits

Fields for IN message parameters

Transmitter inputs IN1, IN2 event description field. ***Type*** – type of input circuit (NC/NO/EOL); ***Delay*** – minimal trigger's exposure time (ms); ***Event code*** and ***Restore code*** – input triggering event and restore codes for sending via first or second radio frequency;

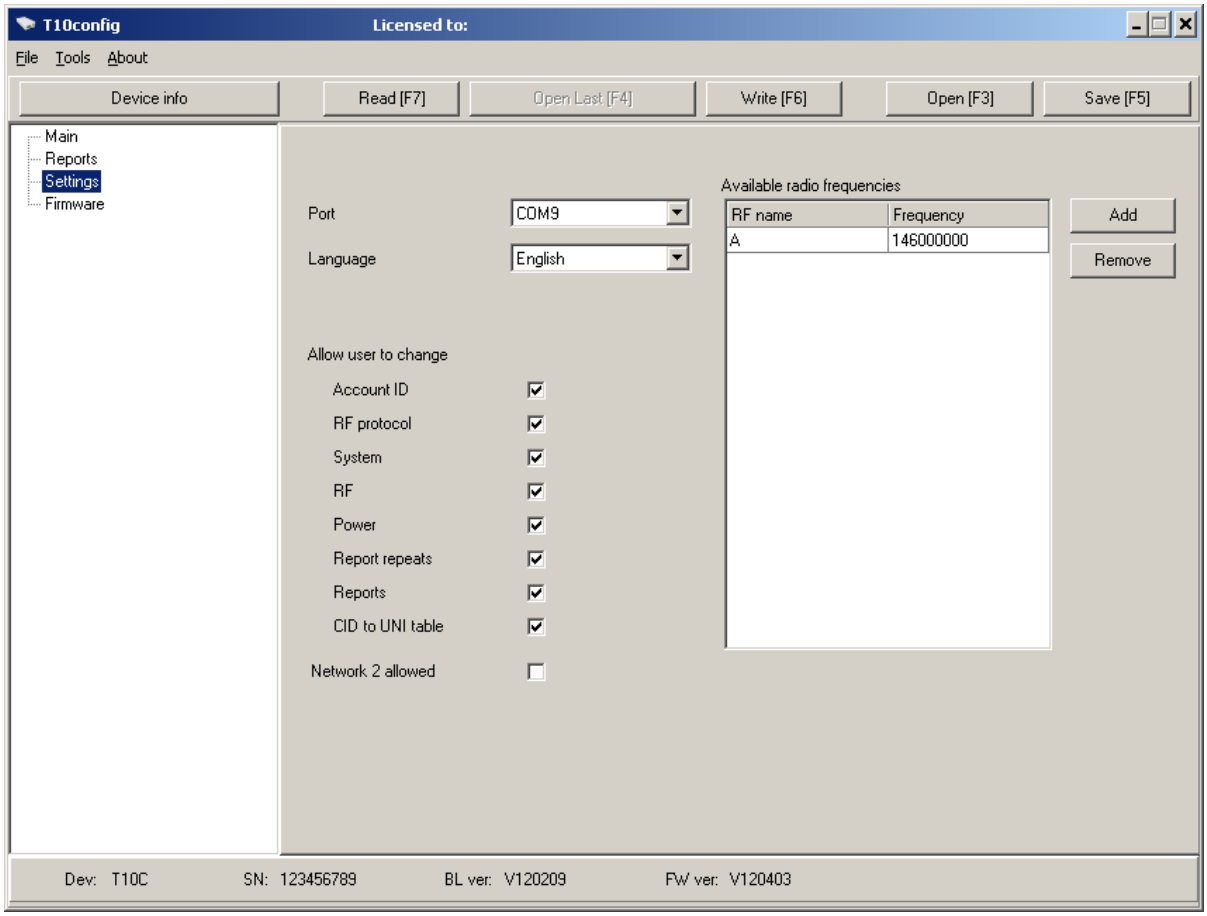
Test event Area that stands for additional *Test* message parameters

Period - *Test* message broadcasting period (hr. and min.);

Delay – delay for sending first *Test* message (hr.) after powering on the transmitter

Send when are no events – *Test* message will be sent only when there will be no events generated during the set ***Period.***

8. Choose ***Settings*** branch and set preferred parameters:



Port See "Select the branch named ***Settings***"

Language List for selecting user interface language.

Allow user to change *User* will be allowed to change operating parameters are marked only.

Available radio frequencies Table of frequency names that can be chosen by selecting *RF name* parameter. If you need to supplement the table, click ***Add*** button. In newly opened window, type the name of radio frequency, its meaning in Hz and click ***OK***.

9. After entering the desired transmitter settings values, click the button ***Write [F6]*** and the transmitter T10 will be loaded with these.

10. Disconnect USB cable from transmitter.

Save [F5] When clicking the button all settings and values from software fields can be stored in your computer. The file with extension *.gst* will be created. This file can be opened by clicking ***Open [F3]*** button and can be used as a template for programming other transmitters.

Restore [F11] The button is used for restoring default settings of the transmitter. After query window appears, click ***OK*** button.

Restoring of factory default settings

There is an option to restore factory setting to the transmitter:

1. Complete items 1-4 as described in the chapter **Setting of operating parameters**.
2. Click ***Restore [F11]*** button. After query window appears, click ***OK*** button.

Updating of firmware

When new performance characteristics are added by manufacturer, it is possible to update previously purchased transmitter‘s firmware:

1. Download the latest T10_vx.xx.prg file from www.trikdis.com website.
2. Complete items 1-4 as described in the chapter **Setting of operating parameters**.
3. In *T10config* software select the branch named ***Firmware***, then load from PC earlier saved *T10_vx.xx.prg* file.
4. Click ***Start [F9]*** button. In newly opened query window, enter *Admin* access code and click ***OK*** button. Firmware process is finished only when a progress bar is fully filled up. Disconnect USB cable from transmitter.

Technical specifications

Supply voltage	Constant voltage from 10 to 15 V
Current consumption	Up to 60 mA in standby; Up to 800 mA when broadcasting
Radio frequency range	Radio frequency programmed with *T10config* configuration software: - transmitters *T10, T10C*: *VHF* band from 146 MHz to 174 MHz; - transmitters *T10U, T10UC*: *UHF* band from 410 MHz to 470 MHz.
Operating frequency count	Up to 2 frequencies
Maximum radiated power	4,95 W
Antenna output impedance	50 Ω
Secondary (collateral) emissions	Meets the requirements of EN 300 113
Broadcasting time	From 60ms to 400ms depending on the selected radio system
Broadcasting repeat count	Selectable from 1 to 8 times
Message buffer capacity	Up to 100 events
Inputs *IN* to connect external circuits	optional NC/NO/EOL=2,2 kΩ type
Configuration of settings	*T10config* software via USB port
Working range	Temperature from -20 °C to 55 °C, relative air humidity up to 90 % at +20 °C
Dimensions	65 x 135 x 25 mm

Transmitter broadcasting protocols and compatibility with the radio receiver

	RAS-002	RAS-2M	LARS	LARS1	RAS-3_xxx
TRIKDIS R7	+	+	+	+	
TRIKDIS RF7	+	+	+	+	
TRIKDIS R11					+
TRIKDIS RF11					+
Other manufacturers			+	+	

Package content

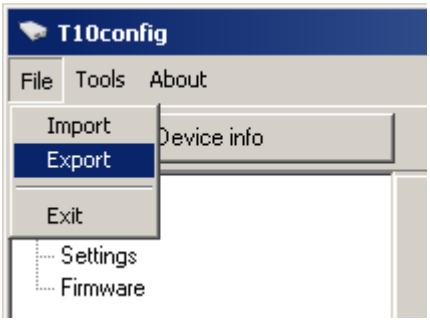
Transmitter	1 pcs.
Resistor (2,2 kΩ)	2 pcs.

Annex. Configuration of authorization and access restricting for another user

It is possible to restrict access for other users to change all operating parameters of transmitter and just allow them changing desired part of operating parameters only.

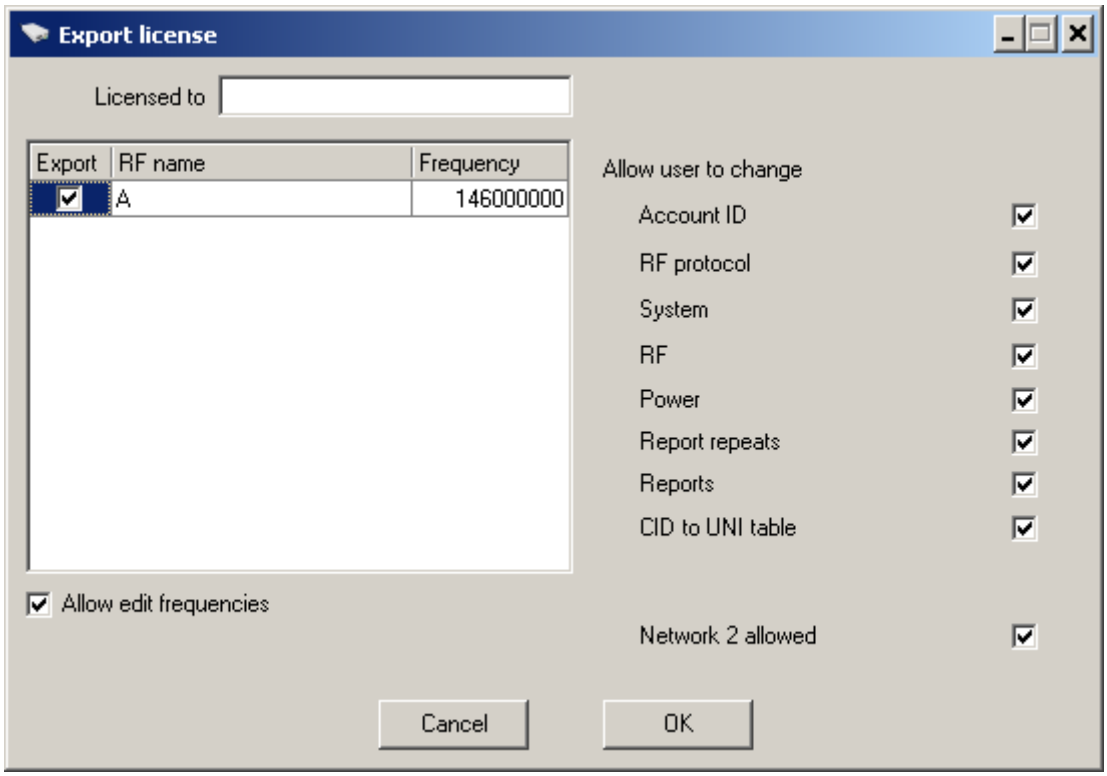
***User* permissions setting:**

Admin can establish the password value of the *User* in the folder ***Main***. Permissions allowed particular *User* changing operating parameters are established in the folder ***Settings***. *Admin* can allow *User* to change only part of the transmitter parameters by checking only appropriate boxes in ***Allow user to change*** list.



Any user of the software can give to another user as many rights as he has (or less) and create license file.

License file is created from menu by command ***File/Export***. In newly opened ***Export license*** window other user's rights can be restricted.



Licensed to	The field for entering customer's name. It will be displayed in main window title.
Export	The table is for selecting particular frequencies witch are allowed other software's user using.
Allow edit frequencies	If checked, other software's user can edit the table *Available radio frequencies*.
Allow user to change	Other software user will be allowed to change only the parameters marked with a tick.

When the button ***OK*** is clicked, the window ***Save As*** will be opened. New file name should be given and desired folder selected. Newly created license file is saved by the clicking button ***Save***.